

**METHOD AND APPARATUS FOR MONITORING  
GASES IN A COMBUSTION SYSTEM**

**ABSTRACT OF THE INVENTION**

A method and apparatus for monitoring and measuring gas concentrations in combustor applications is provided, wherein the apparatus is a gas sensor having a plurality of electrodes cooperating with a single electrolyte cell for detecting the presence and concentration of gaseous components of a flue gas. A voltage is generated based on the flow of ions caused by differing gas concentrations as detected by electrodes across the electrolyte. The change in voltage is correlated and is used to determine the concentration of detected gases, such as combustible gases, nitric oxides, carbon monoxide, etc., contained in the flue gas. The combustor operation may then be optimized to enhance efficiency and minimize undesired gas concentrations in the flue gas in a desired fashion. A calibration gas may be introduced to calibrate the apparatus and a reference gas may be provided to an electrode as a basis for correlating the concentrations of the gases.